

**1. The Present Invention Is Patentable Over Sandelli and JP 59042781.**

The Applicant respectfully traverses the § 103(a) rejection of claims 1-3, 5-8 and 11-12 on the grounds that these references, either alone or in combination, do not teach or suggest all of the features of the present invention as claimed.

**a. JP 59042781 Does Not Cure the Deficiencies of Sandelli.**

As the Office Action acknowledges, Sandelli does not teach the present invention's "process for mixing phenolic resins and epoxy resins to form a separator." November 28, 2001 Office Action at 3. JP 59042781 does not cure this deficiency.

The abstract of JP 59042781 is cited as teaching "a method for producing a carbon separator material for a fuel cell comprising the steps of mixing a carbon powder, an epoxy resin and a phenolic resin, charging the material into a mold and heat pressing the material." *Id.* at 3. Review of the cited portion of this reference, however, reveals that JP 59042781 in fact teaches only a binder consisting of a "vinyl phenol polymer and a *phenol resin initial condensation product* which has an *epoxy group*."

The Applicant respectfully disagrees with the suggestion that the phenol resin initial condensation product having an epoxy group teaches or suggests the epoxy resin recited in the pending claims. The present invention uses a phenolic resin having a hydroxyl group and prepares the epoxy resin and the phenolic resin as main components of the *raw* material of the separator for the fuel cell. Because the phenol resin in JP 590427801 is a condensation product, it must be reaction byproduct, and therefore is not one of the initial raw materials taught in the present application to be combined to create a separator. Accordingly, JP 59042781 does not teach or suggest the element missing in Sandelli.

Because Sandelli and JP 59042781, either alone or in combination, fail to teach or suggest the present invention, claims 1-3, 5-8 and 11-12 are patentable over these references. In view of the foregoing, the Applicant respectfully requests reconsideration and withdrawal of the pending § 103(a) rejections of claims 1-3, 5-8 and 11-12.

**2. The § 112 Indefiniteness Rejection Cannot Stand.**

Claims 1-3, 5-8 and 11-12 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to clearly define the "reaction byproduct gas" and because it uses the relative term "minimization."

The Applicant respectfully maintains that the specification clearly defines the meaning of "reaction byproduct gas." In particular, the specification shows the reaction between the phenolic resin and the epoxy resin in Figure 9, with discussion of the suppression of vapor generation during the reaction beginning on specification page 24, line 11.

The specification at pages 4 and 24 generally identifies the "reaction byproduct gas" as the vapor that may be generated in the chemical reaction, diagrammatically shown in Figure 9, between the phenolic and the epoxy resins. Moreover, the specification identifies the nature of the mixture compositions and the chemical reactions therebetween to achieve the desired minimal gas formation and provides guidance as to the quantities of the components required. Application at 24-26 (*e.g.*, after describing the chemical reactions and undesired properties of some mixtures, the specification identifies that "[i]n order to effectively suppress generation of vapor during heat-press forming by using the binder containing the phenolic resin and the epoxy resin, the epoxy resin has to contain sufficient amount of epoxy group to be reacted with the hydroxyl group such that the hydroxyl group of the phenolic resin generates no undesirable vapor. For example, when using equal amounts of the epoxy resin having an epoxy equivalent ranging from 100 to 250 g is mixed with the phenolic resin having OH equivalent ranging from 100 to 120 g."). Thus, in view of the specification's disclosure, the term "reaction byproduct gas" would be readily understood by one of ordinary skill in the art as describing the vapor generated during the chemical reaction between the phenolic resin and the epoxy resin.

Furthermore, the fact that a claim uses a relative term, such as minimization, does not automatically render the claim indefinite. *See, e.g.*, MPEP 2173.05(b) (*citing Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818 (Fed. Cir. 1984)). The generation of "reaction byproduct gas" or vapor, is minimized, or suppressed, in quantity with respect to the maximum quantity that could be produced by the reaction between the phenolic and epoxy resins. This concept is discussed in detail in the specification on pages 21-22. In particular, the generation of reaction byproduct gas when heat press forming the phenolic and epoxy resins lowers the density and gas-impermeability of the resulting product. Application at 3:3-8. Thus, one of ordinary skill in the art reviewing the pending claims and specification would readily understand that by minimizing the reaction byproduct gas, the density of the resulting product may be raised to 95% of the theoretical density value, or at least 93% of the maximum possible density. Application at 21-22.

The Applicant respectfully submits that the claims are fully supported by the disclosure and are sufficiently definite under the standards of 35 U.S.C. § 112, second paragraph. The Applicant respectfully requests reconsideration and withdrawal of the pending § 112, second paragraph rejections of claims 1-3, 5-8 and 11-12.

### **Conclusion**

In view of the foregoing amendments and remarks, the Applicant earnestly solicits an early and favorable action on the merits and issuance of a Notice of Allowance for claims 1-12.

The Examiner is invited to contact the undersigned to discuss any matter concerning this application.

Applicants respectfully request a two-month Extension of Time to respond to the Office Action of November 28, 2001. The extended period expires April 28, 2002. The Office is hereby authorized to charge the fee of \$400.00 for a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) and any additional fees under 37 C.F.R. § 1.16 or § 1.17 or credit any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,



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